The Association of Family Support After Childbirth With Posttraumatic Stress Disorder in Women With Preeclampsia

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Background: Stressful situations and life-threatening issues such as preeclampsia can lead to Post-traumatic stress disorders [PTSD]. It seems that within social supports, family support has more effect on mental health.

Objectives: The aim of this study was to determine the association between family supports in the postpartum period with occurrence of post-traumatic stress disorder following preeclampsia.

Patients and Methods: In this descriptive longitudinal study, 100 women with preeclampsia admitted in government hospitals of Mashhad were selected using convenience sampling. Post-traumatic stress disorder was diagnosed by psychiatrist interview and perinatal posttraumatic stress questionnaire (PPQ) in sixth week postpartum and family support was measured by family support scale (FSS) in second and sixth weeks postpartum. Data analyzed by SPSS 16 using Spearman correlation coefficient, paired sample T-test and Kruskal-Wallis test.

Results: A reverse significant association was found between family support in weeks 2 and 6 (92.6 ± 22.6, 83.7 ± 21.6, respectively) and PTSD (mean score of 4.8 ± 2.5) (respectively, $P = 0.010$ and $P = 0.011$). The most important variables affecting PTSD with presence of family support in weeks 2 and 6 were postpartum depression in week 6 as well as trait anxiety at the time of admission.

Conclusions: The more support in weeks 2 and 6 postpartum, the less PTSD occurs. Therefore, it is suggested to health care providers who face mothers after delivery to evaluate the support received by mothers and help those with inadequate or inappropriate support.

Keywords: Stress Disorders, Post-Traumatic; Pre-Eclampsia; Family; Social Support; Postpartum Period

1. Background

Post-traumatic stress disorder (PTSD) is defined as a significant anxiety reaction following an extremely serious trauma related to death, severe life threat or any trauma to patient or others (1). These conditions are manifested by fearfulness, inability, numbness, apathy, irritability, sleep disorders and concentration problems (2, 3). When they last more than four weeks, it is called posttraumatic stress disorder (4). The major symptoms are re-experiencing stressful events during sleep (e.g. repetitive nightmares or disturbing thoughts), avoidance of reminding thoughts and situation and arousal symptoms (such as sleep disorders, irritability and concentration problems) (1, 4, 5).

Labor is an important and potentially traumatic event in a woman's life, which could strongly provoke feelings and emotion leading to trauma induced mental symptoms in some women (6, 7). Adewuya reported that Bydlowsky and Raul-Duvall have suggested PTSD after childbirth for the first time (8).

PTSD following delivery is usually related to unwanted pregnancy, nulliparity, severe delivery induced nausea and vomiting, premature contraction, history of abortion, type of delivery, neonatal malformations, history of neonatal hospitalization in NICU, dissatisfaction with neonate's gender in some cultures (2), history of traumatic delivery (2, 8), history of mental disorders, severe anxiety, feeling of lack of control (5, 9), emotional distress (9) and medical problems during pregnancy (2).

Preeclampsia is a medical complication during pregnancy with an incidence of 6 - 8%. Preeclampsia symptoms often cause anxiety about fetal status. Most often it is necessary to terminate pregnancy by cesarean section, which leads to birth of a neonate who is at risk of death or having complications (5, 10). Around 15% of maternal death is due to preeclampsia (11). Mother's illness, perinatal unexpected complaints and birth of preterm neonate contribute to physical and psychological trauma consequently and increasing the risk of PTSD (4). The incidence of PTSD following preeclampsia has been reported as 28% in conducted studies (12). Mothers with delivery induced PTSD experi-

ence nightmares. Furiousness and anxiety are unable to cope with despite their new maternal role (9). Social support could be considered as a strategy for preventing or decreasing emotional disorders after delivery (6).

Social support is defined as an interpersonal communication, which provides psychosocial help for people as needed (13). The most common definition focuses on accessibility and quality of communication with people who provide necessary social support (14).

The most effect of social support on mental health is related to family support construction, i.e. lack of family support increases the rate of mental problems. The best predictors for depression in Mexican women were emotional and financial supports of family (15).

Iles et al. (16) found a significant association between spouse support during labor and manifestation of PTSD symptoms after delivery. Chaaya et al. (17) results showed the importance of family-members and relatives social support for women. Barnet et al. (18) reported that mothers who received support from either their own mother or neonates' father experienced probably less depression symptoms. However, Lesanics (19) reported no association between level of social support and acute symptom of stress and PTSD. Therefore, the role of family support after delivery in PTSD is not still understood.

Due to the crucial role of family in Iranian society, mothers mainly expect family support (20) and no study was found on the association between postpartum family support with PTSD; therefore, the present study aimed to determine the association between postpartum family support and post-traumatic stress disorder in women with preeclampsia.

2. Objectives

The aim of this study was to determine the association between family supports in the postpartum period with occurrence of post-traumatic stress disorder following preeclampsia.

3. Patients and Methods

This longitudinal study was conducted on women with severe and mild preeclampsia (diagnosed in recent week) based on American collage of obstetric and gynecology (ACOG) classification (21) who referred to maternity department of Mashhad governmental hospitals (Emam Reza hospital, Ghaem hospital, Omolbanin hospital and Hashemi Nejad hOspital). An approval was obtained from the ethics committee (Code: 900955, Dated: 7 June 2012). Some letters of introduction were obtained from Mashhad school of nursing and midwifery and presented to the governmental hospitals president from 14 June 2012 to 6 November 2012 in the maternity ward. They were selected by convenience sampling. In public hospitals, patients with preeclampsia who had inclusion criteria were selected and completed the questionnaire. A pilot study was conducted on pregnant women with preeclampsia for the calculation

of sample size. Then, it was calculated as 33 based on correlation coefficient between family support in the second week with PTSD (r = 0.47), confidence interval of 95% and power of 80%. It was trifled because of non-randomized sampling in the three groups (99); however, regarding sample drop out, it was increased to 110. They completed the questionnaires in second and sixth weeks after delivery. Inclusion criteria were term pregnancy, maternal age more than 18 years and singleton pregnancy. The exclusion criteria were neonatal death in prenatal period, hospitalization of neonate in ICU more than 24 hours, stressful event during study, severe depression (beck depression inventory score of 29 - 63) and very high level of anxiety (The score 76 and more of overt anxiety and 73 and more of hidden anxiety using STAI).

An informed consent was obtained from the participants and were assured regarding the confidentiality of data. Thereafter, questionnaires of demographic data, beck II depression questionnaire, STAI anxiety, pregnancy support, labor and delivery support and family support scale were completed. They were screened for trauma by trauma history screen. Women with positive trauma history were excluded. In multipara women, perinatal posttraumatic stress disorder questionnaire (PPQ) was used for PTSD due to their previous traumatic event deliveries. They were excluded if they got a score of more than 6. It took between 30 - 40 minutes to complete the questionnaire.

Questionnaires were completed in order as follows: Maternal-Neonatal information form at first 24 hours of delivery, Maternal-Neonatal information form and Hopkins questionnaire for measuring postpartum social support and family support scale two weeks after delivery. Hopkins questionnaire form, family support scale, beck II depression, STAI anxiety and PPQ six weeks after delivery.

Family support scale includes 29 questions for testing family support. It was scored based on a 5-point Likert scale from 1) strongly disagree, 2) somewhat disagree, 3) neutral, 4) somewhat agree and 5) totally agree. The total score is 29 - 145. The higher scores indicate higher support. PPQ includes 14 yes/no questions. Women, who got scores more than 6, experienced PTSD. Questionnaires for state-trait anxiety of Spiel Berger included 20 questions in each part scored based on a 4-point Likert scale from 1) never, 2) sometimes, 3) moderately and 4) very much. The score ranged 20 - 80. The beck depression inventory (BDI, BDI-II) is a revised beck questionnaire, which is in agreement with depression criteria of DSM-IV. It contains 21 questions scored 0 - 3, the minimum score is 0 and the maximum 63. Pregnancy support questionnaire includes 10 questions with 7-point Likert scale. The total score is 10 - 70 and higher scores indicate higher support. Labor and delivery support questionnaire includes 7 questions with 7-point Likert scale. The total score is 7 - 49 and lower scores indicate higher support. Postpartum social support questionnaire, a tool designed by researchers and Hopkins (2008) summarized and included 20 questions based on a 4-point Likert scale from 0) never, 1) rarely, 2)

usually, 3) often and 4) always. The score ranged 0 - 80. The higher scores indicate higher support. Trauma history screen includes 14 yes/no questions.

Content validity index was used for confirming validity of the questionnaires. Reliability of family social support, postpartum social support and PPQ were confirmed by internal consistency method using Alpha Cronbach (α = 0.77, 0.90 and 0.82, respectively). Reliability of pregnancy support, labor and delivery support and trauma history screen were confirmed by Test-retest (r = 0.95). Anxiety Spiel Berger test for testing state-trait anxiety is a standard test and its validity was confirmed by Mahram (22) in Iran. Its reliability was also confirmed by Alpha Cronbach (α = 0.87, α = 0.82). The validity of beck-II test was confirmed by Wan Mahmud et al. (23) in Malaysia. Its reliability was also confirmed by Alpha Cronbach (α = 0.84).

KS test was used to assess the normality of data. Data analyzed by SPSS 16 using Spearman correlation coefficient, parametric test of paired sample T-test and non-parametric test of Kruskal-Wallis. Confidence interval considered as 95%.

4. Results

During the study, 3 mothers withdrew and 6 mothers discarded due to hospitalization of their neonates in ICU for more than 24 hours, one mother died as well. Finally, data of 100 women entered the analysis.

Mean of family support was 92.6 ± 22.6 in the second week and 83.7 ± 21.6 in the sixth week (ranged 29 - 145). There was a statistically meaningful difference regarding mean of family support between 2 and 6 weeks using paired sample T-test; it declined from 2 to 6 weeks (P = 0.001). A significant reverse association was found between family support of second and sixth weeks after

delivery and mean score of PTSD (P = 0.010 and P = 0.011, respectively). However, no significant association was found between PTSD and other kinds of support (Table 1).

Significant associations were noted between confounding variables including number of pregnancy (gravid), number of delivery (parity), depression six weeks after delivery, family support at admission, systolic Blood Pressure at demission, PTSD at admission and PTSD six weeks after delivery (P = 0.04, P = 0.031, P = 0.001, P = 0.018, P = 0.21 and P = 0.001, respectively). The mean age was 27.1 ± 5.7 years (Table 2). While other confounding variables such as education, type of delivery were not significantly associated with post-traumatic stress disorder (P = 0.564, P = 0.484 and P = 0.516, respectively using Kruskal-Wallis test). Education level of subjects were diploma (n = 30), high school (n = 27), elementary (n = 20), academic (n = 13) and ability of reading and writing (n = 10). Mean of PTSD was 2.2 ± 2.7 in diploma group, 5.1 ± 2.4 in high school group, 4.4 ± 2.2 in elementary, 4.1 ± 1.7 in academic and 4.6 ± 3.1 in the group who has the ability only to read and write. 56% of subjects had vaginal delivery, 6% elective cesarean and 38% emergency cesarean. Mean of PTSD was 5.0 ± 2.0, 4.1 ± 0.4 and 4.6 ± 2.8 in vaginal delivery group, elective cesarean and emergency cesarean, respectively.

General linear model was used to study the effect of different variables simultaneously. Based on general linear model, the most important effective variables on PTSD at presence of family support in second and sixth weeks were respectively, depression 6 weeks after delivery and hidden (at admission) anxiety (Table 3).

Frequency of PTSD was 26% based on PPQ and 17% based on psychiatric interview. Sixty five percent of women had PTSD based on PPQ and diagnosed to have PTSD based on interview as well.

Table 1. Correlation Coefficients of Family Support in Weeks 2 and 6, Pregnancy Support, Labor and Delivery Support and Postpartum Social Support in Weeks 2 and 6 with Mean Score of PTSD

Variables	PTSD		
	Values [a]	Spearman Correlation Coefficients (r_s)	P Value [b]
Family support week 2	22.6 ± 92.6	-0.257	0.010
Family support week 6	21.6 ± 83.7	-0.253	0.011
Pregnancy support	15.9 ± 44.3	-0.089	0.260
Labor and delivery support	9.4 ± 25.6	0.105	0.299
Postpartum social support week 2	13.4 ± 33.8	-0.188	0.062
Postpartum social support week 6 [c]	9.8 ± 23.05	-0.168	0.095

[a] Data are presented as mean ± SD.
[b] S: P < 0.05, NS: P > 0.05.
[c] Abnormal variable (Median: 21, Minimum: 10, Maximum: 54).

Table 2. Correlation Coefficients of Gravidity, Parity and Postpartum depression at Week 6, Family Support (Admit), Diastolic Blood Pressure, Age and Post-Traumatic Stress Disorder (Admit) With Mean Score of PTSD (Week 6)

Variables	PTSD			
	Values [a]	Median (Min - Max)	Spearman Correlation Coefficients (r_S)	P Value [b]
Gravidity	2.0 ± 1.4	1 (1 - 9)	0.197	0.04
Parity	0.8 ± 1.2	0 (0 - 8)	0.216	0.031
Postpartum Depression week 6	11.2 ± 5.7	10 (2 - 28)	0.426	0.001
Family support (admit)	91.9 ± 22.1	90 (44 - 140)	0.236	0.018
Diastolic blood pressure (admit)	95.0 ± 6.5	90 (90 - 120)	0.230	0.021
PTSD (admit)	2.9 ± 1.1	3 (1 - 5)	-0.461	0.001
Age [c]	27.1 ± 5.1	27 (18 - 44)	-0.058	0.564

[a] Data are presented as mean ± SD.
[b] S: $P < 0.05$, NS: $P > 0.05$.
[c] Normal variable.

Table 3. Analysis of Variance for PTSD in The Presence of Family Support in Weeks 2 and 6 and Variables Gravidity, Parity, Postpartum Depression Week 6, Family Support (Admit), Systolic Blood Pressure (Admit), Diastolic Blood Pressure and Hidden Anxiety (Admit)

Variables	F	df	P Value [a]
Family support (admit)	0.227	1	0.63
Family support week 2	0.002	1	0.96
Family support week 6	0.002	1	0.96
Gravidity	0.42	1	0.51
Parity	0.103	1	0.75
Postpartum depression week 6	11.020	1	0.001
PTSD (admit)	0.120	1	0.73
Systolic blood pressure (admit)	0.313	1	0.57
Diastolic blood pressure (admit)	0.093	1	0.76
Hidden anxiety (admit)	4.535	1	0.04

[a] S: $P < 0.05$, NS: $P > 0.05$.

5. Discussion

Since lack of family support increases the probability of mental problems (15), the present study aimed to determine the association between family support and PTSD in women with preeclampsia. The results showed a reverse significant association between family support in second and sixth weeks after delivery and PTSD, i.e. more family support in this time is accompanied with less PTSD. On the other hand, family support was decreased from second to sixth week. Lesanics (19) conducted a study to determine signs of PTSD following emergency cesarean section in New York. They found no significant association between family support and acute sings of PTSD. The mean of family support in their study was less than the mean in the present study. This difference could be real or due to different periods of sampling. In their study, family support was measured just one time (1 - 2 days after delivery), however, in the present study, family support was measured two times (in 2nd and 6th weeks after delivery). The other reason may be due to measurement of family support in Lesanics study, shortly after delivery when patient is usually hospitalized or at home, in both cases she receives family support (19). Modarres et al. (2) conducted a study to determine the incidence of PTSD and its related factors. They reported a significant association between spouse support and PTSD. The healthy women received higher support; however, as the findings were not reported, we could not compare the results with the present study. Iles et al. (16) aimed to determine PTSD and postpartum depression following delivery in couples. There were significant differences between spouse support and PTSD and postpartum depression. PTSD signs in women with less spouse support were less and dissatisfaction of spouse support was increased from the first to sixth week and from sixth week to three months after delivery. In

the present study, there was a descending trend from the second to sixth week after delivery, which was in agreement with Iles et al investigation (16). The present study was similar to the results of Modarres et al. (2) and Iles et al. (16); however, it was not in agreement with Lesanics (19) for the association between family support and PTSD.

The results showed that pregnancy support and labor and delivery support were not significantly associated with postpartum stress disorder and since no study assessed the association of these cases with PTSD, comparing with the present study was not possible.

About social support, Taghizadeh et al. (6), Adewuya et al. (8) and Soderquist et al. (24) as the present study, found no association between social support and PTSD, but Modarres et al. (2), Creedy et al. (25) and Cigoli et al. (26) reported a significant association between social support and PTSD, inconsistent with the present study. The observed differences could be due to differences in population structure, inclusion criteria and time and measurement tools.

Modarres et al. (2), Adewuya et al. (8) and Soderquist et al. (24) found no significant association between age and PTSD. However, Ford et al. (27) reported a significant association. Iles et al. (16) indicated that symptoms are negatively related with age. Of course, in Ford et al. (27) and Iles et al. (16) studies, distribution of age was much higher than the present study, which could cause meaningful differences. In the present study, there was no significant association between post-traumatic stress disorder and education, which is consistent with Taghizadeh et al. (6), Adewuya et al. (8).

Incidence of PTSD was 26%. Sixty five percent of women who had PTSD were diagnosed based on psychiatrics interviews as well (17%). This finding is not similar to Doornbos (12); however, it is very close to Engelhard (5). Doornbos (12) reported 11% of PTSD incidence following preeclampsia, which is less than the present study. It could be due to different sample size, study tools, inclusion and exclusion criteria and community structure. Engelhard et al. reported 28% incidence of PTSD following preeclampsia, which is in agreement with the present study. They reported incidence of PTSD retrospectively in week 14. The most important effective variables on PTSD in the present study were depression 6 weeks after delivery and hidden anxiety (anxiety at admission). Adewuya et al. (8) reported different predictive variables for PTSD such as hospitalization due to delivery complications, delivery by instruments, emergency cesarean section and manual delivery of placenta. In the present study, hospitalization due to delivery complications was considered as exclusion criterion and the kind of placenta delivery was not controlled, which could be considered as study limitations: In Doornbos's study (12), risk factors of PTSD, history of depression, depression at the beginning of study and postpartum neonatal death could predict PTSD up to 40%, which was different from the present study. The present study excluded women with postpartum ne-

onate death, history of psychiatrics diseases and mothers with depression at the beginning of study. Therefore, the results of the present study are not similar to Adewuya et al. (8) and Doornbos (12) studies, which could be related to different exclusion and inclusion criteria.

Based on the results, a significant association was found between family support after delivery with PTSD, but the other variables such as support during pregnancy, labor and delivery, family support during hospitalization and family support and social support after delivery showed no significant association with PTSD. Of social support subscales in most studies, a significant association was found between social support of spouse or family and PTSD. In the present study, the maximum score of social support was related to spouse or family subscale after delivery, which indicated the importance of family support after delivery. As there is a closer association between family members and have common culture, goals and desires (28), they could frankly state their memories. On the other hand, making confident communication encouraging patient to speak about trauma event and teaching necessary treatment skills such as relaxation could effectively influence PTSD. Family, because of its strong and organized structure and having approaches for discussion and problem solving, could help individuals make better decisions, decrease ambiguities and individual's perception of a stressful event, consequently could prevent stress effects and implement successful tasks (29).

Of the strengths of this study are its prospective design and control of some factors such as social support in the second and sixth weeks after delivery, labor and delivery support and hidden and apparent anxiety and depression at admission in week 6. Convenience sampling and strict inclusion and exclusion criteria, which limit generalization of finding could be considered as study limitations.

In Iranian society, family support is high due to close relationships, but it is decreased from the second to sixth weeks. Due to the crucial role of family in Iranian society and its relationship with PTSD and as there was a significant association between postpartum depression and hidden anxiety at admission and PTSD, it is suggested to health care providers to be familiar with PTSD risk factors to assess women in prenatal and postpartum visits and prevent development of PTSD.

Authors' Contributions

Study concept and design: Narges Soltani, Zahra Abedian, Naghmeh Mokhber, Habibollah Esmaily. Acquisition of data: Narges Soltani. Analysis and interpretation of data: Narges Soltani, Habibollah Esmaily. Drafting of the manuscript: Narges Soltani, Zahra Abedian. Critical revision of the manuscript for important intellectual

content: Narges Soltani, Zahra Abedian. Statistical analysis: Habibollah Esmaily, Narges Soltani. Administrative, technical and material support: Narges Soltani, Zahra Abedian, Naghmeh Mokhber, Habibollah Esmaily. Study supervision: Zahra Abedian.

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